

## CLAIMS

1. A method of testing milk from an animal for the presence of an infection in the animal, the method including the steps of introducing a sample of milk and a reagent including light amplifying compound into a reaction chamber (18), the light amplifying compound reacting with a substance produced by cells of the animal in response to infection to emit light, and immediately measuring the intensity of any light emitted from the sample.
2. A method according to claim 1 wherein the light amplifying compound reacts with a substance produced by phagocytic leukocytes in response to infection to emit light.
3. A method according to claim 2 wherein the light amplifying compound reacts with a substance produced when phagocytic leukocytes phagocytose bacteria to emit light.
4. A method according to claim 3 wherein the light amplifying compound reacts with reactive oxygen to emit light.
5. A method according to any one of claims 1 to 4 wherein the intensity of light emitted from the sample is measured up to a maximum of five minutes, after the adding of the reagent to the sample.
6. A method according to any preceding claim wherein the method further includes the steps of connecting a first inlet port (20a) of generally a fluid and light tight reaction chamber (18) of variable capacity to a milk conduit (26) in an automated milking system, connecting a second inlet port (20b) of the reaction chamber (18) to a supply of reagent, increasing the capacity of the chamber (18) in order to draw milk and reagent into the chamber (18).
7. A method according to claim 6 wherein the method further includes the step of controlling electrically operating valves provided in the inlet ports (20a,

20b) to regulate the proportion of reagent and sample drawn into the reaction chamber (18).

8. A method according to claim 6 or 7 wherein the capacity of the reaction chamber (18) is increased by movement of a piston (14).

9. An apparatus for testing milk in an automated milking system, the apparatus including a generally fluid and light tight chamber (18) of variable capacity including an inlet port (20a) and an outlet port (20c), means (14) to increase the capacity of the chamber (18) in order to draw fluid into the chamber (18) from the inlet port or to decrease the capacity of the chamber (18) to expel fluid in the chamber (18) through the outlet port (20c), and a light detector (24) to detect any light emitted from the fluid in the chamber (18).

10. An apparatus according to claim 9 wherein the chamber (18) is provided with two inlet ports (20a, 20b), one (20a) of which is connected to a milk conduit (26), and the other of which (20b) is connected to a source of reagent (30) including a light amplifying compound, the light amplifying compound reacting with a substance present only in an infected sample to emit light.

11. An apparatus according to claim 10 wherein the inlet ports (20a, 20b) include electrically operated valves which may be operated by a controller automatically to regulate the proportion of reagent and sample drawn into the chamber (18).

12. An apparatus according to claim 11 wherein the inlet ports (20a, 20b) may include valves which are metered to ensure that the required proportion of sample and reagent are drawn into the chamber (18).

13. An apparatus according to any one of claims 9 to 12 wherein the means to increase or decrease the capacity of the chamber is a piston (14).

14. An apparatus according to claim 13 wherein the piston (14) is actuated by means of an electrical solenoid.

15. An automatic milking system including a generally fluid and light tight chamber (18) of variable capacity including an inlet port (20a) and an outlet port (20c), means to increase the capacity of the chamber (18) in order to draw milk into the chamber (18) from a conduit for milk via the inlet port (20a) or to decrease the capacity of the chamber to expel fluid in the chamber through the outlet port (20c), and a light detector to detect any light emitted from the fluid in the chamber (18).

16. An automatic milking system according to claim 15 wherein the inlet port (20a) is connected to the milk conduit (26) by means of an auxiliary milk conduit (30).

17. An automatic milking system according to claim 15 or 16 wherein the milking system further includes a data processing apparatus (38) which is connected to the light detector and which is programmed to record the amount of light detected by the light detector, to compare the results with standard data and to provide an indication as to whether the milk has been taken from an animal with mastitis.

18. An automatic milking system according to claim 17 wherein the data processing apparatus (38) is connected to a visual display apparatus adapted to provide a visual warning that mastitis has been detected.

19. An automatic milking system according to claim 17 or 18 wherein the data processing apparatus (38) is connected to an audible warning device adapted to provide an audible warning that mastitis has been detected.

20. An automatic milking system according to any one of claims 15 to 19 wherein the chamber (18) is provided with two inlet ports (20a, 20b), one of which (20a) is connected to the milk conduit (26), and the other of which (20b)

is connected to a source of reagent (30) including a light amplifying compound, the light amplifying compound reacting with a substance present only in an infected sample to emit light.

ART 2A AMINT